

~~APPARATUS FOR COOKING TOAST~~

TOASTER WITH COOLED HOUSING

CROSS REFERENCE TO RELATED APPLICATIONS

This application is the US national phase of PCT application PCT/EP03/01559, filed 17 February 2003, published 11 December 2003 as WO 03/101267, and claiming the priority of Italian patent application MI2002A001188 itself filed 31 May 2002.

FIELD OF THE INVENTION

The present ~~finding~~ invention refers to a ~~an~~ apparatus ~~for cooking toast or toaster.~~

BACKGROUND OF THE INVENTION

As is known, for reasons of cleaning, strength and aesthetics, some of the current toasters are ~~realized with a~~ made from metal, generally chromed ~~casing~~ housing, inside of which there are a plurality of quartz radiating elements or ~~ones with~~ wire resistances, which are normally ~~managed~~ operated by a control device activated by the user of the toaster.

The radiating elements are arranged near to the toast-cooking chamber the access to which is defined by two load openings on the top of the metal outer ~~casing~~ housing.

The metal side walls on the outside of the toaster, ~~while when it is being switched on,~~ heat up substantially by radiation, reaching high temperatures ~~[[from]]~~ with the first toasting operation of ~~[[:]]~~ greater than 60°C.

The upper metal parts of the ~~casing where there are~~ housing with the two load openings also heat up by radiation and ~~also by~~ convection of the hot air which ~~comes~~ passing out ~~[[from]]~~ of them. At the end of the first toasting operation, these upper parts of the ~~casing~~ housing reach very high temperatures, greater than 150°C in the central zone, with the risk of causing burns to the user who accidentally places a hand in direct contact with such parts.

In toasters of the known type, in a first embodiment, the heat by radiation is generated by the radiating elements with wire resistances ~~, which are~~ mounted on thin mica panels and ~~which have~~ having a power density which increases from top to bottom, i.e. toward the inside of the toaster, since the high parts of toast are heated by ~~[[the]]~~ heat coming from ~~the lowest layers~~ below.

In the same way, in a second embodiment ~~[[the]]~~ heat is generated by quartz radiating elements associated with reflective parabolas ~~which are~~ directed so that the infrared radiation better reaches the lower layers of the toast.

The control device of toasters ~~[[,]]~~ of the known type ~~[[,]]~~ is normally cooled by means of the "chimney effect" caused by the flow of hot air ~~which flows~~ from bottom to top, ~~periodically~~ bringing in fresh air from the base of the domestic appliance.

As a consequence ~~to the above~~, it should be noted that toasters with a metal ~~casing~~ housing have, among other drawbacks, that of having the surfaces hot to such a point as to be able to burn the user both during use and immediately afterward.

Moreover, all of the heat combines to heat the upper part of the apparatus.

OBJECT OF THE INVENTION

The task proposed of the present finding invention is ~~that of~~ eliminating the aforementioned drawbacks of known toasters with a metal casing housing.

SUMMARY OF THE INVENTION

In this task, an important purpose object of the finding invention is to realize provide a ~~an apparatus for cooking toast,~~ or toaster, which, while still having a power which is equal to or less than that of a toaster of the known type, keeps its outer metal walls at an extremely low temperature or at least a temperature lower than that which could ~~[[give]]~~ burn the user the ~~sensation of being burnt~~.

Yet another purpose object of the finding invention is to realize provide an apparatus for cooking toast which also allows the optimal cooking of filled sandwiches (or of individual slices of toasted bread) which need higher temperatures required for cooking ham and melting cheese contained in the toast since all of the heat goes to heat the upper part of the apparatus.

A further purpose object of the finding invention is to realize provide an apparatus for cooking toast which can use the heat generated for secondary uses, such as ~~that of~~ heating food outside ~~[[of]]~~ the toaster.

The last but not least purpose object of the finding invention is that of realizing providing an apparatus for cooking

toast which has an extremely robust metal body ~~being made from metal~~, which is easy to clean and which does not have ~~a flow of~~ hot air coming out ~~[[from]]~~ its top ~~[[part]]~~, but rather from a side ~~portion thereof~~.

SUMMARY OF THE INVENTION

~~This task, as well as these and other purposes, These~~ objects are achieved by an apparatus for cooking toast having a body with an outer metal housing casing ~~made from metal material~~ inside ~~[[of]]~~ which there is a plurality of heat-radiating elements ~~managed operated~~ by a control device and arranged near ~~[[to]]~~ the cooking chamber ~~[[the]]~~ access to which is defined by one or more load openings in ~~said the~~ outer housing casing ~~made from metal material, characterized in that it . The toaster~~ comprises means for cooling the surfaces of ~~said the~~ outer casing housing.

Further characteristics and advantages of the invention shall become clearer from the description of a preferred, but not exclusive; embodiment of the apparatus for cooking toast according to the finding invention, ~~illustrated for indicating by way of example~~ and not limiting purposes in the attached drawings, in which:

figure FIG. 1 is a cross-section side view of the apparatus for cooking toast according to the finding invention; and

figure FIG. 2 is a partial schematic view of one of the radiating elements according to the ~~finding in which its is seen invention~~ showing that they are thicker at the top and thinner at the bottom.

SPECIFIC DESCRIPTION

With reference to the ~~figures described above~~ drawing, the apparatus for cooking toast, or toaster, according to the finding invention, wholly indicated with reference numeral 1, comprises a body with an outer metal housing casing ~~made from metal material, generically indicated with 2~~, inside of which there is a plurality of radiating elements, for example quartz radiating elements or ~~ones with a wire resistances~~ , indicated with 3.

The radiating elements 3 are ~~managed~~ operated by an unillustrated control device ~~, not represented,~~ arranged at the bottom of the casing housing 2 ~~[[,]]~~ inside a plastic base ~~made from plastic material generically indicated with 4~~. The radiating elements 3 ~~are arranged near to the flank a~~ cooking chamber 10 for the toast, ~~[[the]]~~ access to which is defined by two load openings 7 on the top of the casing housing 2.

Advantageously, the toaster 1 has cooling means ~~, wholly indicated with 5~~, for the surfaces of the outer casing housing 2. In particular, the cooling means 5 comprises a ventilation member, ~~[[and]]~~ more precisely a radial ventilator fan 6, housed in the base 4 and ~~suitable for~~ capable of generating a current of air which is sucked in through the upper load openings 7 and is expelled at the side and at the bottom of the body, and in particular from the base 4 through ~~[[the]]~~ discharge openings 18.

More specifically, the current of air has a first flow stream 8 of cold air ~~[[8]]~~ which is sucked ~~[[by]]~~ in through the load opening 7 and a second flow stream 9 of hot air 9 ~~which that~~

is ~~sucked by~~ drawn from the cooking chamber 10. The first flow stream 8 of cold air passes mainly in perimetric ~~ducts realized~~ passages 11 formed by partitions inside the casing housing 2, whereas the second flow stream 9 of hot air ~~9 passes~~ is pulled mainly ~~inside~~ from the cooking chamber 10 and mixes with the first flow stream 8 of cold air [[8]] at the bottom of the casing housing 2, upstream of the radial ventilator fan 6.

The unillustrated control device, ~~which has not been represented in the drawings, cannot be housed in a suitable zone of the toaster and,~~ preferably [[,]] is housed inside the base 4. Therefore, it is constantly cooled by the first flow stream 8 of cold air [[8]].

Suitably, the first and second flow ~~of air~~ streams 8 and 9 are substantially kept separate from each other at least along the whole length of the casing housing 2, so that the sides, front and upper ~~outer walls~~ wall surfaces 31 have a low temperature and thus do not feel hot to the user when he touches them.

The wire radiating elements 3 suitably have a power density which decreases toward the base of the casing housing 2 and increases toward the load opening 7. This is due to the fact that the flow of air, as stated, enters from the upper load opening 7 and leaves from the lower discharge opening 18. Therefore, inside the cooking chamber 10 ~~[[, the]]~~ hot air ~~shall be transferred~~ will move downward, compensating for the lower density of the radiating elements 3 in this zone, so as to give the food product or the

toast inside the cooking chamber 10 a virtually uniform radiation on all of ~~[[the]]~~ its surfaces.

The toaster 1 also has closing or shielding elements for the load opening 7 in order to improve performance, i.e. regulate the flow of fresh air 8 along the walls, and to avoid the passage of radiation emitted by the radiating elements 3 through it. For example, the shielding element can be made in any way and, in the embodiment shown in the attached figures, the shielding element comprises a simple door 19 which can be opened for the introduction or removal of toast and which is closed during cooking or when the toaster is not being used so as to avoid the escape of radiation thus keeping the upper surfaces 31 even cooler during operation, and to avoid the entry of dust or dirt inside the cooking chamber 10 when the toaster 1 is not in use.

Clearly, in place of the door 19 any other system can be used, for example commanded by the same lever which allows the toast to ~~fall inside~~ drop into the cooking chamber 10.

In other embodiments (not represented) the toaster does not have the shielding elements.

The speed of the radial ventilator fan 6 can advantageously be varied according to the temperature reached inside the cooking chamber 10. This allows there to be a further regulation of the temperature ~~[[of]]~~ in the cooking chamber 10 which, thanks also to the presence of the ~~shielding elements~~, ~~such as the door 19~~, can operate as a veritable small oven reaching high

temperatures while still keeping the surfaces 31 outside of the metal casing housing 2 cool.

Moreover, ~~[[the]]~~ delivery through the discharge opening 18 of ~~the current of~~ a stream of warm air can allow the heating of croissants or other foods, or butter, placed on top of a side support 21 which can fold onto the side of the body of the toaster 1.

~~The different passages of the flow of air from the casing housing 2 [[,]] and inside the base 4 , are obtained through many is regulated by openings 22 , arranged on the side of the formed in~~ a crumb collection tray 23 placed centrally at the bottom of the cooking chamber 10.

Moreover, it should also be noted how the base 4 has walls 24 made from plastic which cover the walls 31 of the casing housing 2 in ~~the zone in which~~ a lower region where it gets hottest due to the mixing of the two ~~flows of air~~ streams 8 and 9, thus guaranteeing the total cooling of the side walls of the metal casing housing 2.

The operation of the apparatus for cooking toast according to the ~~finding~~ invention can clearly be seen from that which has been described and illustrated.

In particular, each time one wishes to ~~[[cook]]~~ make toast the control device ~~[[shall]]~~ makes the ventilator fan 6 rotate ~~which will~~ to create a flow of air ~~[[going]]~~ moving downward ~~suitable for and thereby~~ cooling the outer wall surfaces 31 of the metal casing housing 2 and ~~for being expelled with~~ subsequently

exiting the housing 2 in a predetermined direction, for example toward the support 21 which can thus be heated.

In practice, it has been noted how the apparatus according to the finding invention is particularly advantageous for having its outer walls cool, while still being made from metal, and for allowing the hot air used to cool down these walls to be reused.

The finding invention thus conceived is susceptible to numerous modifications and variants all covered by the inventive concept. Moreover, all of the details can be replaced with technically equivalent elements. In practice, the materials used, as well as the sizes, can be whatever varied according to requirements and the state of the art.